Test System Connections

K. Einsweiler, LBNL

Now approaching point where we can finalize connections:

- Flex 2.x has prototype test connector (30 pin Elco 5087), which in principle could be the final pinout for all module testing.
- Our standard 50-pin Robinson-Nugent support card connector pinout needs to be updated (add DTO2, and add NTC connection) to match.
- Still in the process of defining “PP0” connection from pigtail to type 1 cables, but quite likely (at least in disk) to use same Elco connector.

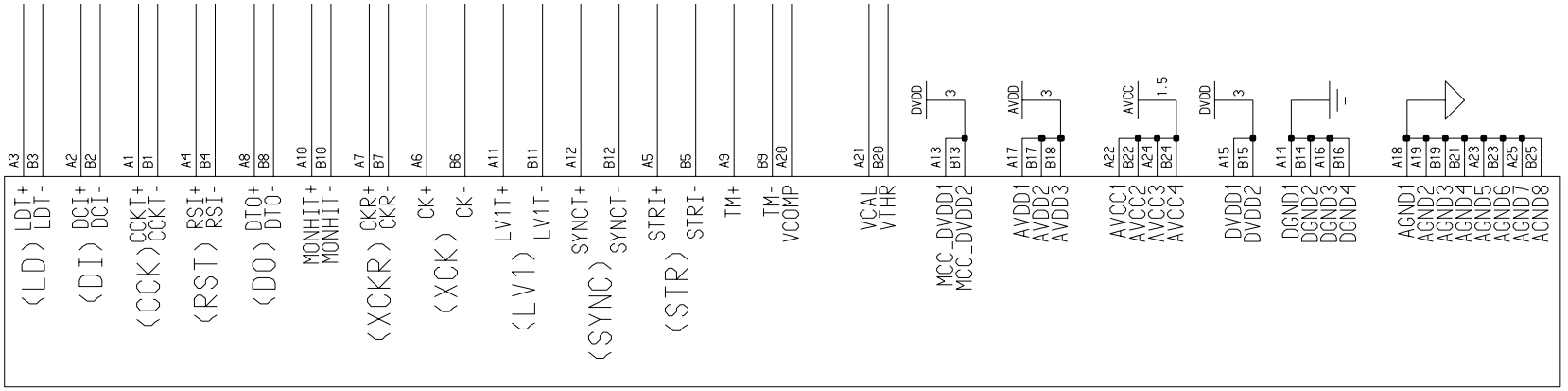
Would like to incorporate support for these “final” connections in new test system:

- Propose updated R/N connector pinout to be as compatible as possible.
- For module test connection, propose to use “mini-support card” which has R/N connector, plus LEMO for HV bias, and LEMO for VCal for input, and Elco5087 for output to Flex 2.x.

Support Card Connector

Two additions since first version:

- Addition of second data output for B-layer operation (DTO2), which requires two additional connections
- Standardization of temperature measurement using two-terminal NTC thermistor.



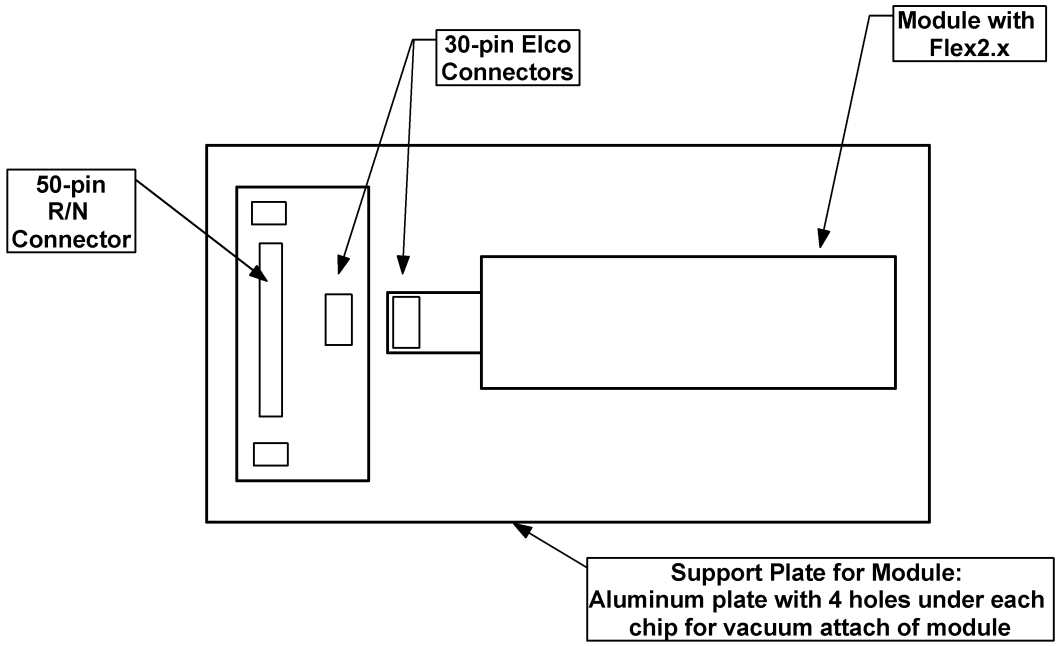
Present pinout has no spare pins (all connected to power):

- First 12 pairs are for all fast differential control signals.
- This is followed by digital supplies for next 4 pin pairs, then analog for next 9 pin pairs. Ideally, would like to squeeze DTO2 into digital block, but no way to do this while retaining proper trace pairing. However A13 and A14 could work, with DVDD at B13 between the two sides of DTO2. Compatibility should be OK.
- Propose to allocate two of the present 8 AGnd signals to the temperature connection (A18 and A19). Since this is a passive component, this is OK.

Mini-Support Card

Need small card to interface between PCC and Flex 2.x (and presumably also production) module:

- Provides connector match between R/N 50-pin and Elco 30-pin connectors.
- Provides HV connection in robust manner (50 mil flat cable is not HV rated, so cannot put this on this connection). Propose to use standard LEMO as we have done so far (not rated for 600V, but a conservative design, seems to be fine).
- Provides external VCal capability with LEMO connector and 50Ω termination (possibly with selectable divider 1:1 or 5:1).



- Use of vacuum attach to Al plate should solve cooling and support problems during production module testing.
- For temperature cycling tests, will want to have a low-CTE support plate (carbon-carbon) with realistic adhesive-based module attachment.

Issues for Test System

- Can we agree on Elco 5087 for now as the test connector (and also for the PP0 connector) ? If so, we can go ahead and order a larger number of parts (large minimum order needed, and long lead times).
- Can we standardize on 10K NTC thermistor? In this case, we would do the temperature measurement using voltage excitation. If we use a Pt RTD, we would want to use current excitation for the temperature measurements.
- Need to agree on pinout modifications and approach to connection to production modules in order to proceed with finalizing next-generation PCC design.